NEW MAYFLY (EPHEMEROPTERA) RECORDS FROM IDAHO[1]

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ABSTRACT: Seven genera and 20 species of mayflies that had not previously appeared as either published or thesis reports of Ephemeroptera from Idaho are recorded from that state for the first time. Available collection data for all species and remarks on the significance of species records are annotated. Some especially noteworthy newly reported Idaho species include *Baetis alius*, *Baetodes bibranchius*, *Camelobaetidius mexicanus* and *Pseudocloeon apache*. Certain of the newly reported species, such as *Baetis alius* and *Baetis notos*, now appear more common in Idaho than elsewhere.

Interest in using aquatic macroinvertebrates as indicators of water quality has stimulated recent collections throughout the state of Idaho. For example, since 1992, the environmental consulting firm of EcoAnalysts, Inc. has processed over 7,000 Idaho macroinvertebrate samples, including over 3,500 samples from the Snake River and its tributaries in conjunction with sampling by the Idaho Power Company, and over 3,500 from lakes, reservoirs, streams, and rivers throughout the state in conjunction with sampling by the Idaho Department of Environmental Quality. As to be expected, such collections have yielded new state records of several species, among which are several of mayfly species. Herein we report 20 species of Ephemeroptera from Idaho that have not appeared in either the published literature or as part of Jensen's (1966) unpublished and unconfirmed thesis records from the state. Annotations, also included herein, will show that certain species constitute unexpected range extensions or are notable for some other reason. The records also constitute a significant contribution to the Mayflies of North America biodiversity and inventory project being conducted at Purdue University.

All specimens reported herein are deposited at one of the following as indicated by the acronym cited in the data: Aquatic Biology Associates, Corvallis, Oregon (ABA); EcoAnalysts, Inc., Moscow, Idaho (EI); the personal collection of Dan Gustaffson, Bozeman, Montana (DG); the Orma J. Smith Museum, Albertson College of Idaho, Nampa, Idaho (OJSM); and the Purdue Entomological Research Collection, West Lafayette, Indiana (PERC). Species records are presented below in alphabetical order by family, genus, and species; locale data are given for each species alphabetically by county.

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AMELETIDAE

Ameletus suffusus McDunnough. Data: One larva, Latah Co, Strychnine Cr, VI-17-1992, G. Lester (EI).

This is a poorly known species, known from very few collections (e.g., Zloty 1996). The Idaho record extends its known range from Alberta, British Columbia, and Oregon.

AMETROPODIDAE

Ametropus ammophilus Allen and Edmunds. Data (all EI): Three larvae, Boise Co, Payette R, IV-30-2000 and five larvae, Middle Fork Payette R, V-1-2000, D. Gustaffson (EI); one larva, Idaho Co, Salmon R at Slate Cr Boat launch, V-1-2000, D. Gustaffson (DG).

Although expected, these records constitute the first actual reports of the family Ametropodidae and genus Ametropus Albarda in Idaho. The relatively few records of this species in California, Montana, Oregon, and Washington (e.g., Allen and Edmunds 1976) are apparently related to difficulty in sampling. This mayfly is an active swimmer and easily avoids commonly used Surber or Hess samplers. Idaho specimens were captured in a large kicknet by rapidly traversing sandbars and agitating the substrate (D. Gustaffson, pers. comm.).

BAETIDAE

Acentrella parvula (McDunnough). Data (all ABA): Four larvae, Bannock Co, Portneuf R, VII-19-2000; four larvae, Bingham Co, Snake R near Blackfoot, VII-18-2000 and 11 larvae, Blackfoot R near Blackfoot; 25 larvae, Madison Co, Henry's Fork R near Rexburg, VII-27-2000.

In Idaho, this well-known and relatively widespread North American species appears to be limited to the southern portion of the state.

Acentrella turbida (McDunnough). Data (all OJSM): Fourteen larvae, Adams Co, Bear Cr, IX-21-1999, S. Whitaker; 76 larvae, Boundary Co, Moyie R, IX-9-1998, K. Davis; 16 larvae, Clearwater Co, Jim Ford Cr, VII-6-1998, J. Paisano; 47 larvae, Custer Co, Salmon R, IX-9-1998, K. Davis; five larvae, Owyhee Co, Clover Cr, VII-7-1998, S. Woodhead; eight larvae, Shoshone Co, Deer Cr, VII-20-1999, C. Largeteau; 74 larvae, Twin Falls Co, North Fork Salmon Falls Cr, VI-8-1998, S. Woodhead.

This is a widespread North American species that surprisingly had not been reported from Idaho previously under any of its synonyms.

Acerpenna pygmaea (Hagen). Data (all EI): One larva, Camas Co, Little Smokey Cr, 0.5 mi below Worswick Cr, VIII-24-2000, A. Mull; three larvae, Teton Co, Lava Cr, VIII-8-1994.

This represents the first report of the genus Acerpenna Waltz and McCafferty from Idaho. In Idaho, the well-known and relatively widespread North American A. pygmaea apparently occurs only in the southern portion of the state, and Idaho now represents the westernmost edge of the known range of this species.

Apobaetis indeprensus Day. Data: one larva, Owyhee Co, Snake R, VII-20-1998, B. Alcorn, R. Piston (EI).

This is a common western species, but its larvae are often overlooked because of their small body size. The single specimen collected from Idaho was taken from a marginal area of the Snake River with a diver-operated suction dredge at 1.0 m depth.

Baetis alius Day. Data: 39 larvae, Bannock Co, Deer Cr, 0.5 mi upstream from Dempsey Cr, VI-22-1998, B. Christenson (OJSM); one larva, Caribou Co, Boulder Cr, 0.5 mi above confluence with Stump Cr, VII-21-1999, B. Christenson (OJSM); one larva, Clark Co, Threemile Cr, 0.8 mi downstream from main rd, VI-10-1998, A. Schrot (OJSM); one larva, Clearwater Co, Little Moose Cr, 0.25 mi upstream of mouth off USFS Rd 255, VII-29-1998, K. Grabenstein (OJSM); three larvae, Custer Co, Hell Roaring Cr, 2.1 mi up Hell Roaring Cr Rd from sign, VII-29-1998, S. Macy (OJSM); two larvae, Idaho Co, Papoose Cr, 1 mi upstream from Hwy 12, VIII-6-1996, R. Weldert (EI); one larva, Lemhi Co, Wagonhammer Cr, 30 ft above Highway 93 crossing Wagonhammer Cr, VII-21-1998, P. Fluckiger (OJSM); 30 larvae, Owyhee Co, Jordan Cr near Delamar Mine, VII-28-1998, S. Lindstrom, C. Robinson (EI).

This species, previously considered very rare in North America, where it had been known only from California (Day 1954), appears to be scattered throughout much of Idaho (the possible exception being the panhandle region). It has been found primarily in 2nd to 4th order, cobble-bottomed streams and usually co-exists with the very common Baetis tricaudatus Dodds.

Baetis flavistriga McDunnough. Data (all EI): six larvae, Shoshone Co, North Fork Coeur d'Alene R, VIII-6-1998, C. Roberts; one larva, Valley Co, Gold Fork R, upstream of Davis Lane Bridge, VII-3-1998, R. Diaz.

This is the second most reported baetid species in North America after B. tricaudatus (McCafferty unpubl.). Now Idaho, along with Utah, New Mexico, and Mexico represent its westernmost continental distribution (see McCafferty et al. 1997). In these western fringe areas, B. flavistriga appears much less common than elsewhere in its range.

Baetis notos Allen and Murvosh. Data: 15 larvae, Bonneville Co, Deep Cr, about 30 m from confluence with Meadow Cr, VI-09-1997, S. Oveson (OJSM); 10 larvae, Caribou Co, Stump Cr, VII-17-1996, B. Christenson (EI); 305 larvae, Custer Co, Donkey Cr, 10 m above two track crossing on Donkey Cr, VI-25-1997, M. Meador (OJSM); five larvae, Idaho Co, Cottonwood Cr, 15 m upstream from Reservation Line Rd Bridge, VI-11-1998, E. Myers (EI) and one larva, Papoose Cr, 1.0 mi upstream from Hwy 12, VII-06-1996, H. Stubbers and nine larvae, Red Rock Cr, Hwy 162S out of Nez Perce, VII-23-1997, D. Cunningham (OJSM); one larva, Kootenai Co, North Fork Coeur d'Alene R, at historical site 0.25 mi downstream of Bootjack Cr, VII-02-1996, S. Collins (OJSM); two larvae, Owyhee Co, Lower Deep Cr, downstream from rd crossing, VII-12-1995 (PERC) and two larvae, Bull Cr, 20 m above confluence with Sheep Cr, VII-13-1998, S. Woodhead (OJSM); eight larvae, Shoshone Co, Gold Cr, 0.5 mi upstream from USFS Rd 50 and 218 Jct, VII-30-1996, D. Call (OJSM); one larva, Washington Co, Crane Cr, 0.2 mi from N Crane Rd (hike over hill to stream required), VI-18-1997, C. Stoehr (OJSM).

This widespread western species was common in warm, low-gradient, cobble-bottomed streams.

Baetodes bibranchius McCafferty and Provonsha Data: two larvae, Payette Co, Snake R nr River Mi 383, VII-7-1998, B. Alcorn, R. Piston (EI).

This is a highly noteworthy record both for the genus Baetodes Needham and Murphy, which has not been previously reported in North America north of Arizona and New Mexico, and the species B. bibranchius, which was previously known only from Texas and Mexico (McCafferty and Provonsha 1993, Randolph and McCafferty 2000). The disjunct presence in Idaho would suggest a northern refugium and a more widespread historical presence in the West during the Pleistocene. The species was collected in a section of the Snake River that forms the state boundary between Oregon and Idaho.

Camelobaetidius mexicanus (Traver and Edmunds). Data: One larva, Washington Co, Snake R at River Mi 352, IX-9-1999, A. Foster, K. Kitcheau (EI).

This is a considerable disjunction for this species, which previously has been known essentially as a common Texas/Mexico species (see McCafferty and Randolph 2000). It was collected on the Snake River only somewhat north of where the also-Texan/Mexican species Baetodes bibranchius was collected (see above). A northern refugium and a more widespread historical presence in the West are also suggested for this species.

Paracloeodes minutus (Daggy). Data: eight larvae, Clearwater Co, Jim Ford Cr, 0.5 mi upstream from Hwy 11, IX-10-1997, M. Rayton (OSJM); four larvae, Owyhee Co, Jordan Cr, VIII-12-1999, J. Pfeiffer (EI).

This species is widespread in the United States and Mexico. This belated discovery of the species in Idaho is most likely due to its small size and the fact that it is often missed by standard sampling methods. It is expected to be more common in Idaho than is suggested by the two records given here.

Plauditus virilis (McDunnough). Data (all OJSM): five larvae, Cassia Co, Harrington Fork, 200 m upstream from Harrington Fork parking lot, VI-11-1997 and 31 larvae, Cow Cr, 0.2 mi downstream from Cow Gulch Spring, VI-18-1997, G. Jensen; 52 larvae, Twin Falls Co, Pole Camp Cr, 300 m above confluence with Shoshone Cr, VI-5-1997, D. Bott and 15 larvae, Pole Camp Cr, 400 m above confluence with Shoshone Cr, VI-5-1997 and 30 larvae, Shoshone Cr, 20 m upstream from rd approaching cr, VI-12-1997, D. Gentry.

This relatively common and well-known North American species finds its westernmost range extension in Idaho. Elsewhere in the West, it has been known only from Colorado, Mexico, and west Texas (McCafferty et al. 1993, Lugo-Ortiz and McCafferty 1995, Wiersema and McCafferty 1998, Randolph and McCafferty 2000).

Pseudocloeon apache (McCafferty and Waltz). Data (all EI): seven larvae, Clearwater Co, Miles Cr, VII-7-1998, E. Myers; one larva, Custer Co, Job Cr, VII-14-1998, S. Jensen; one larva, Owyhee Co, Black Leg Cr, VII-14-1998, N. Misbach and one larva, Alder Cr, VII-16-1998, S. Woodhead and one larva, Cottonwood Cr, VI-7-1998, S. Woodhead and two larvae, Columbet Cr. VII-06-1998, S. Jensen; one larva, Twin Falls Co, Hopper Gulch, VI-26-1998, N. Misbach.

The species, which appears to prefer streams and rivers with warm summer temperatures, is relatively well represented in Idaho. It has been known from Arizona, Colorado, New Mexico, and Utah (in the Colorado River drainage) (McCafferty and Waltz 1995, Durfee and Kondratieff 1997, McCafferty et al. 1997), but it is not known from the Great Basin.

BAETISCIDAE

Baetisca lacustris McDunnough. Data: 35 larvae, Madison Co, Henry's Fork R at SR33 Bridge, IX-16-2000, D. Gustaffson (DG).

This well known species represents the first of the genus Baetisca Walsh reported from Idaho. In the West, Baetisca has also been very infrequently reported from California, Nevada, Washington, and Wyoming (see e.g., Edmunds 1977, Baumann and Kondratieff 2000).

CAENIDAE

Caenis latipennis Banks. Data (all OJSM): one larva, Elmore Co, Moores Cr, 1.6 mi from intersection of rd crossing Upper Moores Cr, VI-16-1998, A. Felton; four larvae, Owyhee Co, Rock Cr, 0.5 mi downstream from Triangle Rd crossing, VI-19-1996, B. Morrison and one larva, Deep Cr, 16.9 mi from Mud Flat Rd, VI-30-1998, E. Hausrath and one larva, Rock Cr, walk along rd after private property (gate) for 0.75 mi, VI-17-1998, R. Diaz and 81 larvae Rock Cr, rd to cr, directly below huge boulder, VI-17-1998, M. Hellhake and two larvae, Cow Cr, just after Soda Cr & Cow Cr confluence, VI-18-1998, M. Hellhake; four larvae, Washington Co, Warm Springs Cr, 4.5 mi N on Rock Cr Rd past Indian Hot Springs, VI-29-1998, M. Hellhake.

Based on its known distribution in the four states bordering Idaho on the east and west (Provonsha 1990), this well-known and widespread species was expected in Idaho.

Caenis youngi Roemhild. Data: 12 larvae, Bonner Co, Hoodoo Cr, 2 mi downstream of Clagstone Rd crossing, VII-1-1998, F. Dye (EI).

Considering the known distribution of C. youngi in Alberta and areas near to Idaho within Montana and Wyoming (Provonsha 1990), it was expected in Idaho. Idaho now represents the western edge of the known range of this species.

EPHEMERELLIDAE

Attenella delantala (Mayo). Data: 18 larvae, Boundary Co, Caribou Cr, 40 m above bridge, VII-29-1994, B. Hoelscher and 15 larvae, Boulder Cr, 100 m upstream from gage station on Rd 1304a, VIII-30-1995, M. Olson (OJSM).

This western species has only been confirmed from California, Oregon and Washington previously (Allen and Edmunds 1961), and its presence in northern Idaho was somewhat expected. The species remains moderately well-known, and in Idaho, it appears restricted to forested streams with cobble bottom and cool summer temperatures.

HEPTAGENIIDAE

Ironodes nitidus (Eaton). Data: 26 larvae, Shoshone Co, Prospector Cr, VII-12-1998 and one larva, Mica Cr, VIII-13-1996, J. Gravelle (EI).

In Idaho, this northwestern species is limited to the Panhandle region in cobble-bottom streams with cold summer temperatures. Jensen (1966) indicated that collections of this species from Oregon near the Idaho border suggested its presence in Idaho. With respect to Ironodes, Jensen (1966) had only seen unidentifiable larvae from Idaho.

LEPTOHYPHIDAE

***Asioplax edmundsi* (Allen).** Data: 10 larvae, Ada Co, Boise R, near mouth, X-1998, T. Maret (EI).

This species, which has recently been confirmed only from Colorado and Utah (McCafferty et al. 1993, McCafferty unpubl.), appears to be limited to low-gradient streams and rivers in the Snake River Plain in Idaho. Typical of the genus Asioplax Wiersema and McCafferty throughout the Southwest and Mexico, it appears tolerant of high sediment levels and warm summer temperatures.

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